

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

BFN2234 – PRINCIPLES OF CORPORATE FINANCE
(All sections / Groups)

16TH OCTOBER 2018
2.30 p.m – 4.30p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **FIVE (5)** printed pages (excluding cover page) with **FOUR (4)** questions.
2. Attempt **ALL FOUR** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

INSTRUCTIONS

There are **FOUR** questions in this section. Candidates **MUST** answer **ALL** questions.

Question1 (25 Marks)

You have been provided the following data about stock A and stock B. The covariance is 0.0015.

State of Economy	Probability of State of Economy	Return on Stock A	Return on Stock B
Bear	0.30	-0.020	0.035
Normal	0.50	0.14	0.060
Boom	0.20	0.20	0.090

Based on the above information, calculate:

- i. The expected return of stock A and B. (8 marks)
- ii. The expected standard deviation of stock A and B. (8 marks)
- iii. The correlation between the returns of the two stocks. (4 marks)
- iv. Based on your answer in (iii) explain the implication in diversification. (5 marks)

Question 2 (25 Marks)

- a) Explain what is meant by business and financial risk. Suppose firm ABC has a greater business risk than firm XYZ. Is it true that firm ABC also has a higher cost of equity capital? Explain. (7 marks)

Continued...

- b) Suppose a three factor model is appropriate to describe the returns of a stock. The current expected return of the stock is 11%. Information about those factors is presented in the following table:

Factor	β	Expected value %	Actual Value %
Inflation	2	5	7
GNP	1	2	1
Interest Rates	-1.8	-4	-2

- i. What is the systematic risk of the stock return?
(6 marks)
- ii. The firm announced that its market share had unexpected increased from 22 percent to 28 percent. Investors know from past experience that the stock return will increase by 0.40 percent for every 1 percent increase in its market share. What is the unsystematic risk of the stock?
(6 marks)
- iii. What is the total return on this stock?
(6 marks)

Question 3 (25 Marks)

- a) The Bayangan Company has expected earnings before interest and taxes of RM185,000, an unlevered cost of capital of 16% and a tax rate of 35%. The company also has RM135,000 of debt that carries a 9% coupon. The debt is selling at par value. What is the value of this firm?
(8 marks)
- b) The balance sheet for Impian Berhad is shown below in market value terms. There are 30,000 shares of stock outstanding.

Market Value Balance Sheet

Cash	RM 390,000	Equity	RM 1,170,000
Fixed Assets	<u>RM 780,000</u>	Total	<u>RM 1,170,000</u>
Total	<u>RM 1,145,000</u>		

The company has announced it is going to repurchase RM40,950 worth of stock. What will the price per share be after the repurchase?

(9 marks)

Continued...

- c) What is the Modigliani-Miller Propositions without taxes and what are the assumptions under this theory?

(8 marks)

Question 4 (25 Marks)

- a) Suppose Adam wants to buy shirts to sell in his neighborhood clothing shop. He can buy the shirts for RM10 each from a local factory and sell them in his shop for RM20. He estimates that he will sell 1,200 shirts per year. Originally, Adam planned to buy 100 shirts per month for a total of 1,200 shirts annually. What he hadn't planned on, though, is the factory charging him an additional RM150 setup cost every time he makes an order. At one order per month, this would add RM1,800 to the cost of the shirts.

Adam then considers buying all 1,200 shirts upfront for a one-time RM150 setup fee, which saves him RM1,650. The problem now is Adam does not have enough space in his shop to store the extra shirts. He could rent storage space but this is also expensive, in the region of RM1.50 per shirt, per year. What's the optimal number of shirts that Adam should order at any one time to minimize both storage and production setup costs?

(6 marks)

- b) Explain why company prefers a shorter operating cycle (OC) and how operating cycle can be shorten.

(7 marks)

- c) Aidil Company is considering buying new equipment that costs RM600,000. The equipment will depreciate the straight line to zero over five years. The company can lease the equipment from Adha Leasing Company with year-end payments of RM150,000. The company can issue bonds at a 10 percent interest rate. The corporate tax rate is 40 percent.

Required

- i. Calculate the net advantage to leasing (NAL)

(10 marks)

- ii. Should Aidil Company buy or lease the equipment?

(2 marks)

Continued...

Present Value and Future Value Tables

Table A-1 Future Value Interest Factors for One Dollar Compounded at k Percent for n Periods: $FVIF_{k,n} = (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.4400	1.5376	1.5625	1.6900
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.7280	1.9006	1.9531	2.1970
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8100	2.0736	2.3642	2.4414	2.8561
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.4883	2.9316	3.0518	3.7126
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.9850	3.6352	3.8147	4.8288
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600	2.8262	3.5832	4.5077	4.7684	6.2749
8	1.0829	1.1717	1.2668	1.3685	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4760	2.6584	2.8528	3.0599	3.2784	4.2998	5.5895	5.9605	8.1973
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179	3.8030	5.1509	6.9310	7.4506	10.604
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3945	3.7072	4.0466	4.4141	6.1917	8.5944	9.3132	13.788
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1518	3.4785	3.8359	4.2282	4.6524	5.1173	7.4361	10.657	11.642	17.922
12	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503	5.9360	8.9151	13.215	14.552	23.298
13	1.1381	1.2936	1.4695	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8858	10.699	16.366	18.190	30.288
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2613	7.0757	7.9875	12.839	20.319	22.737	39.374
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7845	5.4736	6.2543	7.1379	8.1371	9.2655	15.407	25.198	28.422	51.185
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4299	3.9703	4.5950	5.3169	6.1304	7.0673	8.1372	9.3576	10.748	18.488	31.243	35.527	66.542
17	1.1843	1.4002	1.6528	1.9470	2.2920	2.7026	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2705	10.761	12.468	22.180	39.741	44.409	86.504
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3759	3.9990	4.7171	5.5590	6.5436	7.6900	9.0243	10.575	12.376	14.463	26.623	48.039	55.511	112.455
19	1.2081	1.4568	1.7533	2.1058	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	7.2633	8.6126	10.197	12.056	14.232	16.777	31.948	58.568	69.389	146.192
20	1.2202	1.4859	1.8891	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	38.738	73.854	86.736	200.450
21	1.2324	1.5157	1.9803	2.2788	2.7880	3.3996	4.1406	5.0338	6.0888	7.4002	8.9492	10.804	13.021	15.688	18.822	22.574	46.065	91.592	108.429	247.055
22	1.2447	1.5460	1.9161	2.3680	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.109	14.714	17.861	21.645	26.186	55.208	113.574	135.525	321.164
23	1.2572	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.026	13.552	16.627	20.362	24.891	30.376	66.247	140.831	169.407	417.539
24	1.2697	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	12.239	15.479	18.789	23.212	28.625	35.236	79.497	174.631	211.758	542.801
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2918	5.4274	6.8485	8.6231	10.835	13.585	17.000	21.231	26.462	32.919	40.874	85.396	216.542	284.088	705.641
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.053	13.269	17.448	22.892	29.960	39.116	50.950	66.212	85.859	237.376	634.820	807.794	*
35	1.4166	1.9999	2.8139	3.9451	5.5160	7.6861	10.677	14.785	20.414	28.102	38.575	52.800	72.069	98.100	133.178	180.314	590.668	*	*	*
40	1.4886	2.2080	3.2820	4.8010	7.0400	10.286	14.574	21.725	31.409	45.259	65.001	93.051	132.782	188.884	267.854	378.721	*	*	*	*
50	1.6446	2.6916	4.3839	7.1067	11.457	18.420	29.457	46.902	74.358	117.391	184.565	288.002	456.736	709.233	*	*	*	*	*	*

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at k Percent for n Periods: $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%	
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000	
2	2.0100	2.0206	2.0300	2.0400	2.0500	2.0600	2.0700	2.0806	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500	2.1600	2.2000	2.2400	2.2500	2.3000	
3	3.0301	3.0504	3.0609	3.1216	3.1525	3.1830	3.2149	3.2454	3.2781	3.3100	3.3421	3.3744	3.4066	3.4396	3.4725	3.5056	3.6400	3.7776	3.8125	3.9600	
4	4.0604	4.1216	4.1836	4.2465	4.3101	4.3744	4.4399	4.5061	4.5731	4.6410	4.7097	4.7793	4.8498	4.9211	4.9934	5.0665	5.3680	5.8842	5.9756	6.1870	
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101	6.7424	6.8771	7.4416	8.0484	8.2070	9.0431	
6	6.1520	6.3681	6.4884	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7155	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.9296	10.980	11.259	12.755	
7	7.2135	7.4343	7.5625	7.6983	7.8932	8.1420	8.3938	8.6540	8.9226	9.2004	9.4872	9.7833	10.0808	10.4027	10.730	11.067	11.4714	12.916	13.673	17.583	
8	8.2857	8.5830	8.6923	8.9212	9.2491	9.5491	9.8975	10.260	10.637	11.028	11.436	11.850	12.280	12.717	13.233	13.727	14.240	16.489	19.123	19.842	23.858
9	9.3685	9.7610	10.169	10.593	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.520	20.799	24.712	25.802	32.515	
10	10.462	10.950	11.464	12.006	12.578	13.161	13.816	14.487	15.193	15.937	16.722	17.549	18.426	19.337	20.304	21.321	25.959	31.643	33.253	42.610	
11	11.567	12.160	12.808	13.486	14.207	14.972	15.784	16.645	17.561	18.531	19.561	20.655	21.814	23.045	24.340	25.733	32.150	40.238	42.566	56.405	
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.002	30.850	39.581	50.885	54.208	74.327	
13	13.809	14.680	15.618	16.527	17.513	18.682	20.141	21.495	22.953	24.523	26.212	28.029	29.885	32.099	34.352	36.768	48.497	64.110	68.760	97.625	
14	14.947	15.974	17.086	18.292	19.615	21.051	22.554	24.215	25.975	27.853	30.095	32.393	34.883	37.561	40.505	43.872	59.198	80.496	86.949	127.813	
15	16.097	17.283	18.599	20.024	21.579	23.270	25.129	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.580	51.660	72.035	100.815	109.687	197.286	
16	17.258	18.639	20.157	21.825	23.657	25.673	27.898	30.324	33.003	35.950	39.190	42.753	46.672	50.980	55.747	60.925	87.442	126.011	138.109	218.472	
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.884	53.729	59.118	65.075	71.673	105.931	157.263	173.638	285.014	
18	19.615	21.412	23.414	25.645	28.132	30.906	33.990	37.450	41.301	45.559	50.396	55.750	61.678	68.394	75.836	84.141	128.117	195.594	218.045	371.518	
19	20.811	22.841	25.117	27.671	30.539	33.767	37.379	41.446	46.018	51.159	56.939	63.446	70.749	78.968	88.212	98.803	154.740	244.033	273.556	483.573	
20	22.019	24.297	26.870	29.778	33.066	36.766	40.995	45.762	51.160	57.275	64.203	72.052	80.947	91.025	102.444	115.380	180.688	303.601	342.945	630.165	
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.699	92.470	104.768	118.610	134.841	225.026	377.465	428.561	820.215	
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	81.214	92.563	105.494	120.436	137.632	157.415	271.091	469.056	538.101	*	
23	25.716	28.845	32.453	36.618	41.430	46.996	53.406	60.893	69.532	79.543	91.148	104.603	120.265	138.297	159.276	185.601	326.237	582.639	673.626	*	
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	66.765	76.790	88.497	102.174	118.155	136.831	158.699	184.168	213.978	392.484	723.461	843.033	*	
25	28.243	32.030	36.459	41.646	47.727	54.805	63.249	73.106	84.701	98.347	114.413	133.334	155.620	181.874	212.793	249.214	471.981	898.092	*	*	
30	34.765	40.568	47.575	56.085	66.439	79.058	94.461	113.283	135.308	164.094	199.021	241.333	293.169	356.787	434.745	530.312	*	*	*	*	
35	41.696	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.596	431.663	546.681	693.573	881.170	*	*	*	*	*	
36	43.077	51.994	63.276	77.598	95.836	119.121	148.913	187.102	236.125	298.127	380.164	484.463	618.749	791.673	*	*	*	*	*	*	
40	48.886	60.402	75.401	95.026	120.800	154.762	199.635	259.057	337.882	442.993	581.826	767.091	*	*	*	*	*	*	*	*	
50	64.403	84.578	112.797	152.667	209.348	290.336	406.629	573.770	815.084	*	*	*	*	*	*	*	*	*	*	*	

Present Value and Future Value Tables

Table A-3 Present Value Interest Factors for One Dollar Discounted at k Percent for n Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	28%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8695	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9428	0.9248	0.9070	0.8906	0.8754	0.8603	0.8457	0.8316	0.8179	0.8045	0.7914	0.7785	0.7659	0.7535	0.6844	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4236	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2306	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9052	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2358	0.2143	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3185	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4159	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5757	0.5051	0.4423	0.3876	0.3405	0.2992	0.2633	0.2320	0.2045	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4846	0.4193	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4591	0.3896	0.3307	0.2819	0.2419	0.2076	0.1783	0.1531	0.1303	0.1105	0.0936	0.0794	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5114	0.4323	0.3574	0.3046	0.2620	0.2210	0.1878	0.1595	0.1353	0.1135	0.0946	0.0792	0.0659	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4115	0.3325	0.2759	0.2302	0.1900	0.1568	0.1295	0.1071	0.0881	0.0725	0.0599	0.0486	0.0318	0.0160	0.0130	0.0069
19	0.8277	0.6864	0.5703	0.4748	0.3927	0.3106	0.2507	0.2017	0.1645	0.1335	0.1071	0.0859	0.0681	0.0542	0.0436	0.0343	0.0218	0.0097	0.0074	0.0038
20	0.8195	0.6730	0.5537	0.4564	0.3709	0.3038	0.2407	0.1884	0.1468	0.1168	0.0917	0.0703	0.0534	0.0404	0.0307	0.0224	0.0144	0.0065	0.0048	0.0023
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2894	0.2341	0.1887	0.1437	0.1137	0.0887	0.0673	0.0504	0.0374	0.0277	0.0194	0.0114	0.0055	0.0040	0.0018
22	0.8034	0.6468	0.5219	0.4210	0.3389	0.2664	0.2171	0.1707	0.1237	0.0937	0.0687	0.0473	0.0304	0.0174	0.0077	0.0094	0.0055	0.0036	0.0025	0.0012
23	0.7954	0.6342	0.5067	0.4036	0.3195	0.2449	0.1927	0.1447	0.1067	0.0767	0.0517	0.0303	0.0134	0.0004	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
24	0.7876	0.6217	0.4919	0.3861	0.3001	0.2230	0.1671	0.1171	0.0851	0.0551	0.0291	0.0061	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
25	0.7798	0.6095	0.4776	0.3701	0.2821	0.2030	0.1441	0.0911	0.0591	0.0331	0.0071	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
30	0.7419	0.5521	0.4120	0.3083	0.2214	0.1414	0.0894	0.0554	0.0334	0.0114	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0897	0.0577	0.0357	0.0137	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
40	0.6699	0.4602	0.3150	0.2137	0.1427	0.0915	0.0595	0.0375	0.0155	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
45	0.6317	0.4259	0.2806	0.1793	0.1083	0.0571	0.0251	0.0031	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
50	0.6000	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	0.0001	0.0001	0.0001	0.0001

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at k Percent for n Periods: $PVIFA = [1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	28%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9343	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8695	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4508	1.4400	1.3608
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1085	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	2.9908	2.7454	2.6893	2.4358
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3903	5.2084	5.0369	4.8754	4.7232	4.5803	4.4465	4.3223	4.2078	4.1029	3.6848	3.3288	3.2423	2.8921
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2109	5.9753	5.7558	5.5519	5.3634	5.1899	5.0303	4.8845	4.7523	4.6336	4.5282	4.0511	3.6488	3.5372	3.1411
9	8.5690	8.1822	7.7881	7.4253	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5655	3.4831	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0256	6.7101	6.4127	6.1348	5.8859	5.6552	5.4422	5.2461	5.0669	4.9023	4.1925	3.8919	3.7505	3.0919
11	10.368	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.255	10.575	9.9540	9.3851	8.8533	8.3638	7.9427	7.5361	7.1607	6.8157	6.4924	6.1944	5.9176	5.6603	5.4208	5.1971	4.4392	3.8514	3.7251	3.1803
13	12.134	11.348	10.635	9.9856	9.3936	8.8527	8.3577	7.9038	7.4960	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.106	11.296	10.563	9.8986	9.2850	8.7455	8.2442	7.7852	7.3657	6.9819	6.6282	6.2925	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.868	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5585	8.0607	7.6061	7.1900	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.718	13.578	12.561	11.652	10.838	10.106	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.166	12.166	11.274	10.477	9.7632	9.1216	8.5436	8.0215	7.5488	7.1196	6.7291	6.3728	6.0472	5.7448	4.7746	4.0591	3.9099	3.2948
18	16.398	14.992	13.754	12.659	11.690	10.828	10.055	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0790	3.9279	3.3036
19	17.226	15.678	14.324	13.134	12.095	11.158	10.339	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3185
20	18.046	16.351	14.877	13.590	12.482	11.470	10.594	9.8161	9.1285	8.5136	7.9533	7.4694	7.0246	6.6231	6.2593	5.9288	4.8896	4.1163	3.9538	3.3158
21	18.857	17.011	15.415	14.029	12.821	11.704	10.836	10.017	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.043	11.061	10.201	9.4424	8.7715	8.1757	7.6446	7.1855	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.5882	8.8932	8.2864	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.739	12.550	11.469	10.529	9.7096	8.9847	8.3481	7.7843	7.2829	6.8351	6.4336	6.0726	4.9371	4.1426	3.9811	3.3272
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9848	3.3286
30	25.808	22.395	19.600	17.292	15.372	13.765	12.469	11.258	10.274	9.4649	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9781	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.655	16.374	14.468	12.948	11.655	10.567	9.6262	8.8552	8.1755	7.5896	7.0700	6.6166	6.2153	4.9915	4.1644	3.9954	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6705	8.8786	8.1924	7.5970	7.0790	6.6231	6.2201	4.9929	4.1640	3.9987	3.3331
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1056	6.6418	6.2335	4.9965	4.1659	3.9995	3.3332
50	38.166	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.9149	9.0417	8.3045	7.7572	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333

